



CITY OF BRADFORD

HEALTH REPORTS

1939–1945

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PREFACE.

This report deals with the health records of the City of Bradford up to the end of the year 1944. Mainly on account of the changed composition of the civilian populations as a result of the war, local vital statistics do not give comparable results to those in peace, and any conclusions to be drawn from them must therefore be very guarded. Nevertheless, so far as Bradford is concerned, from the figures given in the report it seems fair to assume that the records do show that the general health of the city during these wartime years has been well maintained. The birth-rate after an initial fall shows now a material increase which the general death-rate has on the whole tended to decline. The infantile and maternal mortality rates which are more reliable as they are calculated on actual births and deaths, have both shown quite a marked improvement, and this is especially satisfactory in maternal mortality which now shows signs of maintaining a satisfactory decline. The continuous fall in the tuberculosis death-rate, despite all the difficulties of war which tend to increase the incidence of this disease, is a matter of special significance. On the other hand, we have cancer and malignant disease generally showing a continuous and marked increase.

All these results are noteworthy when it is remembered that as a result of the outbreak of war hospital and institutional arrangements in the city were severely handicapped in carrying out their normal work while the medical and nursing personnel was being continuously curtailed. All these institutions did exceedingly good wartime work, as did also the health inspectors and health visitors. The carrying out of special duties and responsibilities naturally caused some degree of inconvenience and delay, but this was never excessive and the public in general suffered uncomplainingly.

I.—VITAL STATISTICS.

Area and Population. The City of Bradford has an area of 25,504 acres, and the population as adjusted by the Registrar General for the middle of 1939 was 287,500.

The civilian population of the City of Bradford has shown very wide variations during the years of war, both in total number and in age and sex distribution. This has been due to (a) a loss of civilian population from recruitment to the Services and from evacuation in the early period of the war, and to (b) a gain of civilian population from the incoming of workers and their families to new or expanding industries and to official and unofficial evacuation from other areas of civil population especially during the latter period of the war.

Bradford has for many years been a place where large numbers of employed persons in its area resided a greater or lesser distance beyond its boundary, and difficulties of transport brought considerable numbers of these either to reside in, or to lodge in, the city. Taking all these facts into consideration the average number of persons who constituted the resident civilian population during the war would probably not fall far short of the mid-1939 estimate, although at times it fell considerably short of this. This estimate is 287,500 persons distributed in an area of 25,500 acres, giving a distribution of 11·3 persons per acre. There are 20 wards in the city and the population is roughly distributed according to the following table :—

DISTRIBUTION AND DENSITY OF POPULATION.

Wards					Estimated Population, 1939	Area of Wards in Acres	Persons per Acre
Allerton	..	..	..	..	15,094	2,324	6.5
Bolton	..	..	..	..	12,267	1,044	11.8
Bradford Moor	..	..	..	..	16,746	435	38.5
Clayton	..	..	..	..	10,159	1,888	5.4
East Bowling	..	..	..	..	14,488	571	25.2
Eccleshill	..	..	..	..	15,173	1,135	13.4
Exchange	..	..	..	..	12,687	430	29.5
Great Horton	..	..	..	..	16,612	848	19.6
Heaton	..	..	..	..	14,917	883	16.9
Idle	..	..	..	..	10,668	2,898	3.7
Listerhills	..	..	..	..	14,826	413	35.9
Little Horton	..	..	..	..	13,607	322	42.3
Manningham	..	..	..	..	15,103	368	41.0
North East	..	..	..	..	14,036	557	25.2
North Bierley East	..	..	..	..	16,594	3,139	5.3
North Bierley West	..	..	..	..	17,522	1,142	15.3
South	..	..	..	..	13,567	414	32.8
Thornton	..	..	..	..	11,896	2,791	4.3
Tong	..	..	..	..	14,464	2,998	4.8
West Bowling	..	..	..	..	17,074	904	18.9
City	..	..	..	..	287,500	25,504	11.3

It will be seen that the average density of population varies greatly from about 3.7 in the Idle Ward to 42.3 in Little Horton Ward. This density of population is a density of the average number of persons living in the total acreage of the ward and is quite definitely misleading as a general factor in determining health, as many of the wards of the City, especially in the centre, have large areas built up with business and industrial premises with few, if any, persons living in these premises. Thus the real density of Little Horton, Manningham, South and Exchange Wards is relatively much greater than shown on the table. Within half a mile of the centre of the City there is, and always has been, much congestion of the houses on the available land.

Births. The number of births registered in the City since 1939 have shown very great variations, the smallest number being that registered in 1941 and the largest number being that registered in 1944. The following table shows the variation in the birth-rate during this period :—

LIVE BIRTHS REGISTERED 1939-44.

Year	..	..	1939	1940	1941	1942	1943	1944
Total	..	..	3612	3685	3551	3977	4157	4645
Birth-rate		..	12·42	12·81	12·35	13·90	14·46	16·15
Males Total		..	1907	1885	1820	2012	2103	2480
Females Total		..	1705	1800	1731	1965	2054	2165
Male births to 1,000								
Female births		..	1118	1047	1051	1074	1024	1146
Illegitimate births :								
Total	..	..	214	234	201	244	327	391
Per cent	..	..	5·9	6·3	5·7	6·0	7·9	8·4

AVERAGE QUINQUENNIAL BIRTHS FROM 1886.

1886-90	..	29·8	1911-15	..	19·0	1936-40	..	13·5
1891-95	..	27·5	1916-20	..	15·4	1941	..	12·8
1896-00	..	25·1	1921-25	..	17·9	1942	..	12·3
1901-05	..	22·6	1926-30	..	15·2	1943	..	13·9
1906-10	..	20·1	1931-35	..	13·5	1944	..	16·1

Deaths. The general death-rate in the City showed on the whole a considerable decline, the highest rate being that recorded in 1940 and the lowest that in 1942. Particulars of the corrected deaths for each year is shown in the following table :—

DEATHS, 1939-44.

Year	..	..	1939	1940	1941	1942	1943	1944
Total Deaths		..	4237	4557	4260	3823	4150	3934
Death-rate		..	14·71	15·85	14·81	13·29	14·43	13·61
Male—death-rate			16·00	17·61	16·30	15·01	16·30	15·04
Female—death-rate			13·84	14·09	13·48	12·32	12·88	12·40

AVERAGE QUINQUENNIAL DEATH-RATES FROM 1886.

1886-90 ..	20·9	1911-15 ..	15·5	1936-40..	15·0
1891-95 ..	19·7	1916-20 ..	16·0	1941 ..	14·81
1896-00 ..	17·9	1921-25 ..	14·1	1942 ..	13·29
1901-05 ..	16·3	1926-30 ..	14·2	1943 ..	14·43
1906-10 ..	15·1	1931-35 ..	14·1	1944 ..	13·61

Infantile and maternal mortality have each continued to show declines, the rates for 1942 being the lowest recorded. These rates are calculated per 1,000 births and are therefore a more accurate index than one dependent on an estimated population.

INFANTILE AND MATERNAL MORTALITY RATES 1939-44.

Year	1939	1940	1941	1942	1943	1944
Infantile mortality	61	68	68	50	51	53
Maternal mortality	3·17	2·88	2·99	2·40	2·78	2·50

The age distribution of the deaths is shown in the following table:—

Year	1939	1940	1941	1942	1943	1944
Under 1 year ..	218	251	242	204	213	249
1—5 years ..	51	57	69	63	63	48
5—15 years ..	57	56	47	39	50	50
15—45 years ..	408	377	371	365	344	296
45—65 years ..	1164	1292	1178	1049	1186	1058
Over 65 years ..	2339	2524	2353	2103	2294	2233

TABLE A.
VITAL STATISTICS OF BRADFORD, 1913-39.

Year	Population	Birth Rate	Death Rate	Zymotic Death Rate	Infantile Mortality Rate
1913	290,540	19·6	15·1	1·10	128
1914	291,482	19·6	15·7	1·22	122
1915	*280,737	17·4	16·9	1·22	123
1916	*271,105	16·67	15·99	0·61	118
1917	*266,338	13·06	15·34	0·81	132
1918	*259,707	13·30	19·13	1·07	123
1919	*282,714	13·40	16·27	0·31	113
1920	293,979	20·52	13·31	0·42	93
1921	291,100	19·57	13·72	0·66	109
1922	291,300	17·92	14·02	0·36	87
1923	290,800	18·19	13·75	0·48	78
1924	290,200	16·94	14·86	0·31	92
1925	290,200	16·63	13·97	0·65	95
1926	288,700	16·31	13·58	0·47	92
1927	293,200	14·73	14·57	0·52	92
1928	288,500	15·32	13·60	0·38	69
1929	289,200	15·03	15·66	0·50	80
1930	293,254	14·92	13·45	0·44	75
1931	300,900	13·56	14·21	0·24	71
1932	296,300	13·56	13·89	0·26	75
1933	295,100	13·22	14·68	0·32	79
1934	293,650	13·68	13·35	0·34	62
1935	292,200	13·55	14·28	0·38	64
1936	290,500	13·42	14·93	0·43	82
1937	289,510	13·85	14·64	0·34	69
1938	288,700	13·51	13·76	0·26	58
1939	287,500	12·42	14·91	0·19	61
1940	287,500	12·81	15·85	0·20	68
1941	287,500	12·35	14·81	0·18	68
1942	287,500	13·90	13·29	0·20	50
1943	287,500	14·46	14·43	0·18	51
1944	287,500	16·15	13·61	0·17	53

* Civil population.

II.—SANITARY CIRCUMSTANCES OF BRADFORD.

(A) *Water.* The water supply of Bradford, as provided by the Corporation Waterworks, is obtained from several upland surface sources and is distributed throughout the City by gravitation. The supply is constant and the water in its native state has a high standard of purity. Before being distributed, however, it is chlorinated. Though a soft upland water, only one source of supply, that from Thornton Moor, exhibits in its natural state any appreciable degree of plumbo-solvency. The water here is collected from the peaty uplands on the eastern slopes of the Pennines in a reservoir 1,241 feet above sea level. It is treated at this reservoir with lime salts so as to reduce its plumbo-solvic action, and so treated it forms an excellent and safe supply. Constant sampling for chemical and bacteriological examination is maintained to check the purity of all the sources as distributed in the City. There are now only 45 farms and 110 houses, all in isolated localities, not connected with Corporation mains.

(B) *Drainage and Sewerage.* There are some 180 farms and about 700 houses in isolated parts of the City not connected with Corporation sewers.

(C) *Closet Accommodation and Scavenging.* Only 0·7 per cent. of the houses in the City still remain on the dry conservancy system. These are all houses where sufficient water supply and drainage are not reasonably available. There are still, however, more than 4,300 waste water closets in the City. Further, there are still about 17·0 per cent. of the houses in the City without a separate sanitary convenience for its own use. The following table gives an estimate of the sanitary accommodation at the end of 1944. Much progress has been made in these matters and the rapid improvement which was being brought about under the Housing and Local Acts has been seriously interrupted and delayed by the war.

ESTIMATE OF SANITARY ACCOMMODATION AT THE END OF 1944.

(i.) Dwelling-houses.

	No. of Houses	Water Closets	Waste Water Closets	Privies
More than one sanitary convenience to each house ..	7343	13250	412	3
One to each house	65550	61150	4250	150
Less than one to each house..	17500	9500	50	250
Totals	90393	83900	4712	403

(ii.) Business and other Premises.

	No. of Premises	Water Closets	Privies
Factories, workshops, and other business premises	4965	13073	18
Places of worship, schools, public institutions, clubs, &c. ..	757	4796	54
Totals	5722	17869	72

SUMMARY.

	<i>Number</i>	<i>Percentage</i>
Houses with water closets	85,393	94.5
Houses with waste water closets	4,350	4.8
Houses with privies	650	0.7
Number of water closets	101,769	
Number of waste water closets	4,712	
Number of privies	475	
Number of dry ashpits	240	
Number of dust bins	106,962	

PROGRESS OF THE PROVISION OF WATER CLOSET ACCOMMODATION IN
EXISTING PREMISES.

Year	Dwellinghouses W.C's.	Factories and Workshops W.C's.	Other Premises W.C's.	Totals W.C's.
1929	369	111	19	499
1930	289	87	28	404
1931	276	64	15	355
1932	332	103	20	455
1933	336	99	42	477
1934	259	66	49	374
1935	280	157	55	492
1936	271	176	45	492
1937	1020	106	41	1167
1938	256	116	19	391
1939	304	133	14	451
1940	121	44	8	173
1941	126	54	18	198
1942	118	55	10	183
1943	75	40	6	121
1944	62	31	4	99

(D) *Housing.* Of the 90,393 houses in the City it is estimated that considerably less than one-third are of the back-to-back type, the remainder being through houses. With the slum clearance action under the Housing Act 1936 practically all the older type back-to-back houses disappeared, and there now remain only those “improved” types built in blocks of four in the later stage of back-to-back building in the City in the twenty-five years subsequent to 1860. In many areas of the City such houses are still very numerous, and while they do not present all the bad features of the older types, they do not afford a reasonable standard for healthy living, and as soon as the housing position permits it renewed clearance and demolition schemes affecting such houses should be undertaken.

(1) *New Houses.* The average number of new houses certified fit for human habitation annually during the five years preceding 1925 was 393, and the following statement shows the number so certified each year since then :—

Year	New Houses	Year	New Houses	Year	New Houses
1925	1,521	1930	508	1935	1,524
1926	2,246	1931	604	1936	1,468
1927	2,069	1932	1,129	1937	1,650
1928	1,927	1933	1,141	1938	1,801
1929	958	1934	1,455	1939	1,351
1925-29	1,744 (average)	1930-34	967 (average)	1935-39	1,559 (average)

In the years 1940 to 1944 the number of new houses certified as fit for human habitation under the Bradford Waterworks and Improvement Act 1871 was each successive year as follows :—

338, 19, 4, 4, and 3

an average of 73. In the ten years prior to 1939 the number of new houses so certified in each Ward is shown in the following table :—

NEW BUILDINGS.

Showing number of New Buildings certified as fit for habitation in each of the Wards, and in the whole City, during the years 1930-1939.

WARDS	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Allerton	35	147	681	59	80	126	121	54	33	35
Bolton.. ..	13	23	55	71	95	81	41	152	67	82
Bradford Moor ..	14	10	40	36	72	195	92	1	20	—
Clayton	34	33	34	461	111	76	61	36	40	41
East Bowling ..	7	6	3	—	5	13	52	70	28	54
Eccleshill	43	58	59	34	33	46	127	158	172	148
Exchange	16	—	1	1	8	117	4	24	45	—
Great Horton.. ..	7	63	58	97	116	108	123	105	61	73
Heaton	12	14	4	21	24	19	28	31	56	50
Idle	9	47	13	33	19	46	92	84	87	30
Listerhills	3	1	—	—	—	—	—	—	12	6
Little Horton.. ..	6	—	2	10	19	21	8	320	504	354
Manningham	148	—	—	7	14	48	108	6	10	12
North East	—	—	3	15	97	26	17	16	15	25
North Bierley East ..	15	14	52	55	72	53	29	49	42	26
North Bierley West ..	95	48	77	81	210	260	262	216	231	168
South	—	—	—	3	8	12	17	—	112	10
Thornton	4	8	11	36	103	90	98	74	75	64
Tong	5	10	17	82	324	52	68	66	50	51
West Bowling ..	42	20	19	39	45	135	120	188	141	122
City Total ..	508	504	1129	1141	1455	1524	1468	1650	1801	1351

TYPES OF HOUSES BUILT BY THE CITY COUNCIL IN EACH LOCALITY FROM
1920 to 1939.

Site	Non-parlour 4 bed- rooms	Parlour and 4 bed- rooms	Parlour and 3 bed- rooms	Non-parlour 3 bed- rooms	Non-parlour 2 bed- rooms	Houses for aged persons	Flats	Total	Houses and Shops
Odsal ..	—	—	28	386	40	—	—	454	4
Thornbury ..	—	—	20	130	16	—	—	166	2
Bradford Moor	—	12	114	468	74	—	—	668	12
Scholemoor ..	—	10	122	360	12	—	—	504	6
Thackley ..	—	—	—	58	—	—	—	58	—
Eccleshill ..	—	—	120	718	40	—	—	878	6
Shirley Manor	—	—	—	350	—	—	—	350	4
Chellow Grange	—	—	52	674	44	—	—	770	—
Bierley ..	—	—	50	814	—	49	—	913	16
Thornton ..	—	—	100	200	20	—	—	320	—
Swain House	—	—	32	654	52	—	—	738	8
Lower Grange	—	—	68	718	30	40	—	856	8
Whetley Lane	—	—	—	180	36	24	156	396	—
Greengates ..	—	—	—	40	—	—	—	40	—
Musgrave Rd.	—	—	—	42	—	—	—	42	—
White Abbey	16	—	—	58	—	36	124	234	—
Low Moor ..	—	—	—	22	—	—	—	22	—
Idle	—	—	—	86	—	—	—	86	—
Woodhall Place	—	—	—	6	—	—	—	6	—
Clayton ..	—	—	1	73	—	—	—	74	—
Clayton Heights	—	—	—	—	—	20	—	20	—
Longlands ..	—	—	—	—	—	—	66	66	—
Canterbury Avenue ..	107	—	—	610	264	164	—	1145	2
Gibson Street	6	—	—	62	—	24	—	92	—
North Wing	3	—	—	9	—	24	—	36	—
Broomfields	4	—	—	8	—	8	—	20	—
Totals ..	136	22	707	6,726	628	389	346	8,954	68

Housing Shortage. With the suspension of house building during the war and the restriction of all but essential repair work in existing houses the living conditions of the population gradually deteriorated. Housing shortage became acute, overcrowding increased and houses which in other times would have been considered not reasonably fit for human habitation remained occupied or were re-occupied. The Health Committee gave much attention to the problems involved and early formed the opinion that the difficulties would only be overcome by a large scale programme of permanent building. In 1944 the Committee estimated the requirements in housing at a minimum of 12,000 houses, of which

2,500 should be built as soon as possible after the termination of hostilities. This estimate was based upon the following considerations (a) new dwelling-houses before the war were being built at the rate of over 1,500 a year to meet the normal needs of the population; practically no houses were being built during the war; (b) want of current repair work had led to such deterioration in existing house structures that many would require closure or demolition, and (c) the constantly increasing number of applications for houses received at the Estate Office and the many urgent cases of bad housing and overcrowding brought to the notice of or disclosed by the officers of the Health Department. The number of applications for houses standing in the register of the Estate Office in December 1944 was 8,297. In view of all this the Committee decided to secure at once sufficient land for the initial part of their housing programme, and after careful consideration decided to acquire by compulsory purchase order the following sites : Eccleshill (North) 91.785 acres, Eccleshill (South) 41.891 acres, Buttershaw 58.362 acres, and Clayton 45.521 acres, a total of 237.559 acres, and the orders for the purchase of these acres were confirmed at the end of the year.

III.—PREVALENCE AND CONTROL OF DISEASE.

(A) INFECTIOUS DISEASES

The mortality rate in Bradford from enteric fever, smallpox, measles, scarlet fever, whooping cough, diphtheria, and diarrhoea and enteritis under 2 years (known for convenience as Zymotic diseases) during the past 50 years is shown in the following table :—

AVERAGE QUINQUENNIAL ZYMOTIC DEATH-RATES FROM 1896.

1896-1900	...	2.0	1916-20	...	0.4	1936-40	...	0.27
1901-05	...	1.7	1921-25	...	0.5	1941	...	0.18
1906-10	...	1.3	1926-30	...	0.5	1942	...	0.20
1911-15	...	1.2	1931-35	...	0.31	1943	...	0.18
			1944	...	0.17			

It will be seen that during this period a remarkable fall has taken place in the number of deaths from these infectious diseases, the present rate being less than one-tenth of what the rate was 50 years ago.

The diseases to be notified in Bradford are smallpox, cholera, plague, diphtheria, membranous croup, erysipelas, scarlet fever, ophthalmia neonatorum, infective enteritis, acute poliomyelitis, cerebro-spinal fever, tuberculosis, acute polio-encephalitis, encephalitis lethargica, pemphigus neonatorum, pneumonia and influenzal pneumonia, malaria, dysentery, and the fevers known by any of the following names, typhus, typhoid, enteric, relapsing, continued or puerperal.

During the past ten years the incidence of these diseases has been exceedingly low, enteric fever, scarlet fever and smallpox having practically ceased to contribute to the mortality rate. Diphtheria is still a contributing factor, though only to the extent of one-third of what it was 10 years ago.

MORTALITY RATES PER 1,000 IN BRADFORD, 1935-44.

Year	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Diphtheria ..	0.19	0.18	0.17	0.08	0.04	0.03	0.03	0.03	0.07	0.06
Enteric Fever ..	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01
Scarlet Fever ..	0.02	0.02	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00

Despite the fact that less than one-quarter of the child population is protected from smallpox by vaccination, and the frequency during the war years of contacts arriving in the City, no cases of the disease occurred. This has been mainly due to the protection which vaccination has afforded to possible contacts. In practice vaccination in Bradford to-day is rather a means of isolating possible sources of infection by a circle of vaccinated persons than a general attempt to make the whole community immune to the disease.

VACCINATION STATISTICS.

Year	1 Births	2 Vaccinated	3 Insus- ceptible	4 Dead	5 Con. Objector	6 Post- poned	7 Removed	8 Un- accounted	Percen - age o Vaccinated including Columns 5, 6, 7, 8
1938	3,939	634	9	172	2,718	34	243	129	83·8
1939	3,749	404	5	160	2,568	17	246	349	84·8
1940	3,826	462	7	208	2,373	44	279	453	82·3
1941	3,817	657	7	179	2,348	25	374	227	77·9
1942	4,075	768	6	171	2,527	33	379	192	76·8
1943	3,890	693	6	140	2,461	31	373	186	75·6

In erysipelas and puerperal pyrexia there has been a considerable drop in the number of cases during the past 10 years, the cases of erysipelas having fallen from 174 in 1939 to 115 in 1944, and puerperal pyrexia from 68 in 1939 to 24 in 1944. Influenza has contributed in varying degrees to the death-rate, the number of deaths each year since 1935 being 57, 56, 129, 25, 47, 63, 73, 33, 115 and 29 respectively; the last severe outbreaks of this disease in the City was in 1929 and again in 1935 when 268 and 181 deaths took place in these respective years. Cases of anthrax are now exceedingly few in number, there being each year from 1935 the following cases : 1, 2, 3, 2, 1, 2, 1, 0, 0, 1 cases, with one death only in each of the years 1935, 1939, and 1941, and no other deaths.

(B) TUBERCULOSIS

During the past thirty years there has been a very great reduction in the death-rate from all forms of tuberculosis; this can be seen in the following table which shows that the death-rate is now little more than one-third of what it was thirty years ago.

AVERAGE MORTALITY RATE PER 1,000 FROM TUBERCULOSIS IN
BRADFORD FOR PERIODS OF FIVE YEARS FROM 1911.

Periods	1911- 1915	1916- 1920	1921- 1925	1926- 1930	1931- 1935	1936- 1940	1941	1942	1943	1944
Pulmonary ..	1.19	1.16	0.84	0.81	0.72	0.55	0.54	0.44	1.50	0.44
Other Forms ..	0.34	0.30	0.21	0.17	0.13	0.11	0.12	0.13	0.14	0.10
All Forms ..	1.53	1.46	1.05	0.98	0.85	0.66	0.66	0.57	0.64	0.54

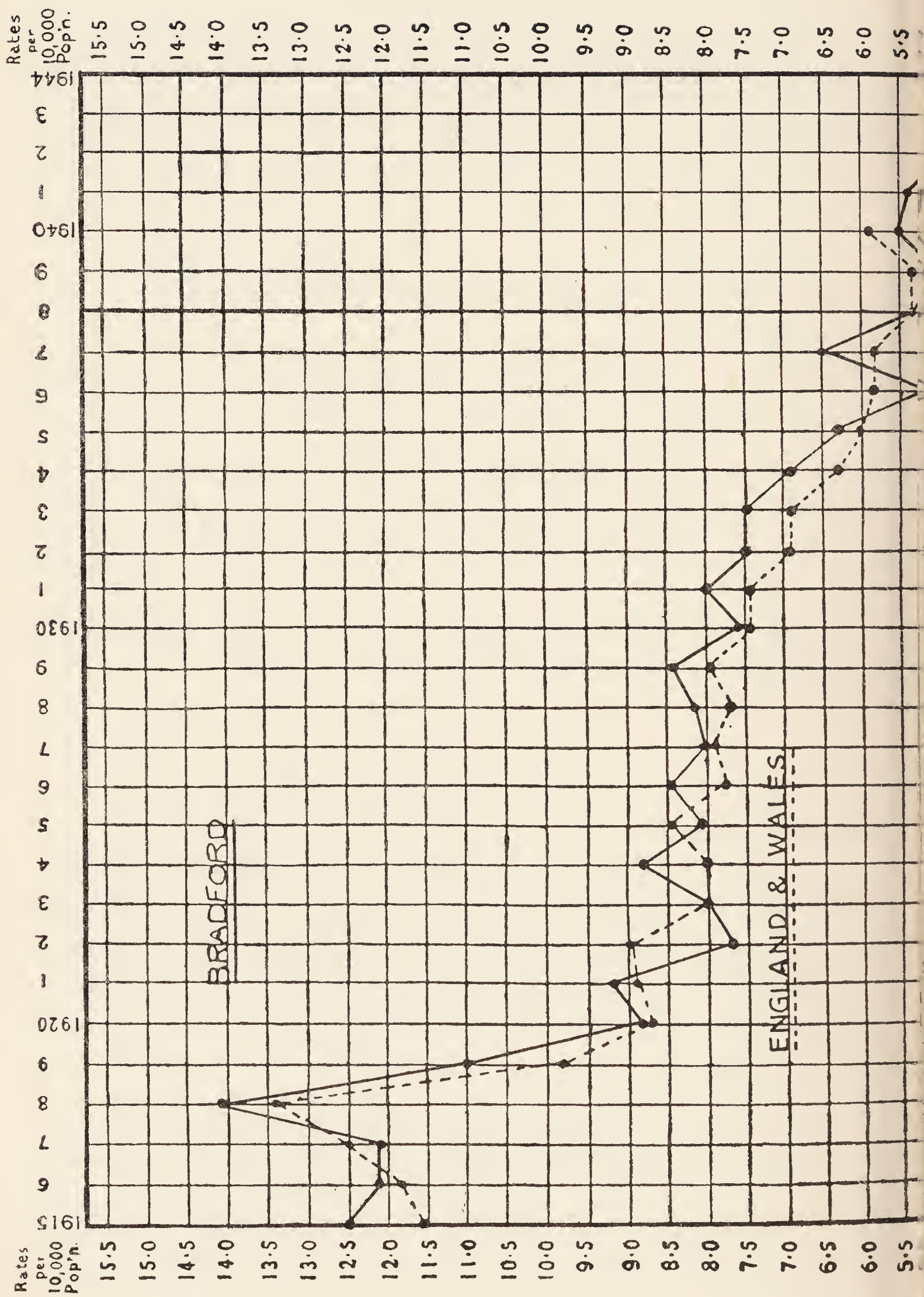
The following statement shows the number of deaths in pulmonary and other forms of tuberculosis during the past ten years.

DEATHS FROM TUBERCULOSIS, 1935-44.

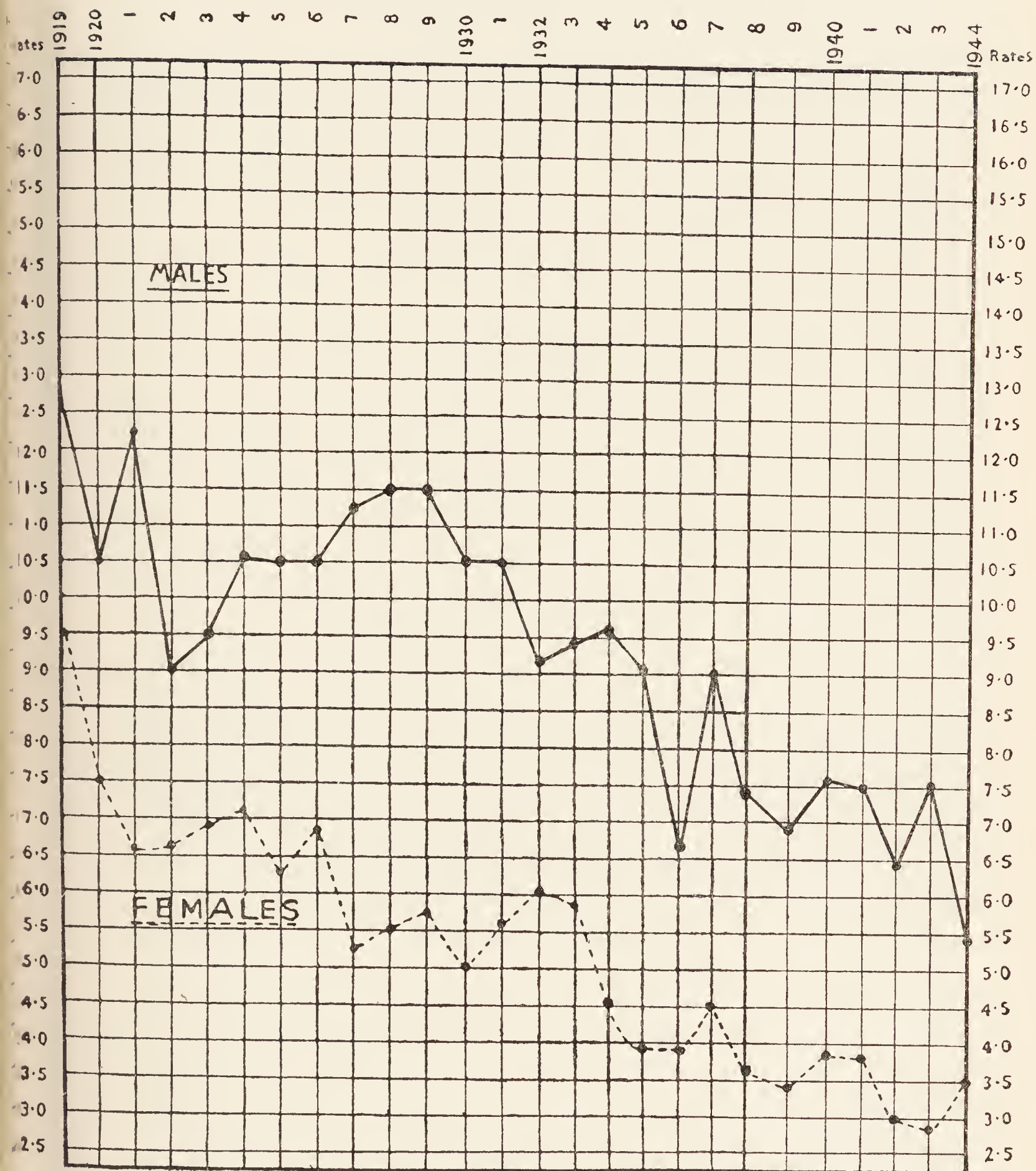
Year	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Pulmonary	185	150	190	154	142	149	147	116	130	115
Non-Pulmonary ..	19	42	34	30	24	29	31	35	37	27
Total	204	192	224	184	166	178	178	151	167	142

The charts on the following pages show the continuous fall in the death-rate from pulmonary tuberculosis among both men and women. On the whole the fall among women has been rather more marked and the fall in the tuberculosis death-rate has been little interrupted by the outbreak of war. The results in Bradford in these respects compare favourably with those recorded in some other places.

DEATH-RATES FROM PULMONARY TUBERCULOSIS PER 1,000 OF THE
POPULATION IN ENGLAND AND WALES AND BRADFORD, 1915-1944.



DEATH-RATES FROM PULMONARY TUBERCULOSIS PER 10,000 OF THE
POPULATION IN BRADFORD ACCORDING TO SEX.



(D) OTHER DISEASES

Malignant Disease. The death-rate from these diseases continues to rise so that one-sixth of the total mortality is now attributable to this cause. As the incidence of malignant disease is largely confined to persons over 40 years of age this factor in the causation of death in the older part of the population is of very great importance.

DEATHS AND MORTALITY RATES PER 1,000 SINCE 1935.

	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Deaths	544	526	540	523	514	540	564	594	612	608
Mortality rate ..	1.86	1.81	1.87	1.81	1.81	1.99	2.09	2.24	2.31	2.31

The female sex is rather more prone to death from malignant disease. This arises from the large number of deaths due to cancer of the breast and cancer of the uterus; the male sex on the other hand shows a considerably higher rate in cancer of the various parts of the alimentary tract and cancer of the respiratory organs. For the eight years prior to 1940 the following table shows the number of deaths that have occurred in the City classified according to the site of the disease.

DEATHS FROM MALIGNANT DISEASE 1932-39 BY SITE.

SITE	1932	1933	1934	1935	1936	1937	1938	1939	Totals
Bladder	8	4	3	7	2	13	10	7	54
Bone	7	7	4	9	9	7	8	3	51
Breast	42	53	44	69	47	72	61	55	443
Cervix and Uterus ...	55	45	48	45	43	39	51	47	373
Colon	61	82	71	70	70	61	73	77	565
Gall Bladder	2	6	7	7	5	4	6	8	45
Jaw	1	3	5	4	7	4	7	4	35
Kidney	6	5	4	3	2	7	7	4	35
Larynx and Pharynx ...	10	15	14	16	11	9	5	10	90
Liver	29	23	17	19	21	23	18	21	171
Lungs and Mediastinum ...	18	18	23	39	36	32	35	54	255
Mouth	10	3	4	5	5	6	5	6	44
Œsophagus	20	16	10	24	21	23	15	14	143
Ovaries	6	8	10	18	14	20	7	12	95
Pancreas	21	16	17	17	17	20	19	12	139
Penis	2	1	3	3	4	5	2	2	22
Prostate	7	9	6	18	10	10	14	3	77
Rectum	34	33	38	46	44	48	36	32	311
Skin	1	1	12	3	7	10	7	13	54
Stomach	98	113	87	88	106	89	113	101	795
Testicle	2	3	1		4	2	1	2	15
Tongue	11	13	10	12	5	11	7	12	81
Tonsil	3	3	2	3	6	3	1	—	21
Vulva and Vagina	4	5	7	3	2	2	9	—	32
Miscellaneous	21	19	19	16	28	20	6	15	144
TOTALS	479	504	466	544	526	540	523	514	4096

From this table it would appear that cancer of the alimentary tract accounts for more than half of the 4,096 deaths in these eight years, the disease affecting the upper part of this system (œsophagus and stomach) and the lower part (colon and rectum) in almost the same proportion. In more than one-quarter of the deaths was the genito-urinary system involved, the great majority of these cases being women, and in more than 10 per cent. was the breast the organ affected, again nearly all women.

While there has been great increases in knowledge in the natural history, the cause and the methods of treatment of cancer in recent years, many essential facts still elude us, so that methods of prevention and lines of treatment are still very uncertain and empirical. Accumulating facts give promise of success, but in almost every department of malignant disease a vast amount of patient and critical investigation is required. Much of this investigation will of necessity be unproductive of immediate good results, but it will all add to the sum of our knowledge of these

diseases, without which no measures of control or treatment can be well founded.

In Bradford for some years prior to the war an attempt was made to investigate the histories of cases of malignant disease in the City, and records were accumulating as to the incidence prognosis, and effects of treatment which threw some light on the position. The work was done in close co-operation with the medical profession in practice, and the hospitals (voluntary and municipal) whose active interest and sympathy was essential. Malignant disease, including suspected malignant disease, was voluntarily notifiable, and practitioners were urged to notify suitable cases coming under their care. In addition, cases admitted to the hospitals and some nursing homes were reported, so that a considerable proportion of cases come under notice at various stages of the disease.

The following table shows the notifications received each year from general practitioners since 1928 and for comparison the number of deaths each year is set out in the table.

Year	Notifications			Deaths Total
	Male	Female	Total	
1928	95	58	153	440
1929	70	117	187	445
1930	105	123	228	480
1931	101	157	258	486
1932	96	144	240	485
1933	113	152	265	504
1934	100	157	257	466
1935	95	138	233	544
1936	102	156	258	526
1937	99	141	240	540
1938	114	167	281	523
1939	98	120	208	514

While voluntary notification of the disease has not done much to disclose the extent of the incidence of the disease it has had some good general effects in teaching the population that cancer in many cases, especially when early in the disease, is curable by the best modern means, and in familiarising the public with the disease so that knowledge may dissipate the unreasoning dread with which it is regarded. The manner in which cases brought under notice were or were not being treated is shown in the following table :—

CANCER TREATMENT, 1932-1939.

	1932		1933		1934		1935		1936		1937		1938		1939	
Total cases admitted to Hospitals or Nursing Homes during the year ..	317		326		327		325		521		495		536		480	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
	132	185	126	200	130	197	140	185	216	305	225	270	236	300	205	275
Curative Treatment Attempted																
Group A. } See Footnote	25	74	25	94	25	87	26	84	47	153	40	107	41	130	41	125
Group B. }	20	19	19	20	30	12	19	22	35	26	26	27	31	36	39	29
Palliative Surgery or Radio-therapy Treatment	36	33	28	32	23	33	31	25	42	42	44	36	55	35	31	33
Cases nursed in Hospitals, Nursing Homes, or at Home, not treated by Surgery or Radio-therapy:—																
(a) Hospital or Nursing Home Cases	51	59	54	54	52	65	64	54	92	84	115	100	109	99	100	89
(b) Home Cases (not included in total of Section side-headed "2")	45	54	76	94	59	79	27	38	32	38	29	50	27	39	33	39
Total notified and investigated Cases of known or suspected Malignant Disease	177	239	202	294	189	276	167	223	248	343	254	320	263	339	238	314
	416		496		465		390		591		574		602		552	

EXPLANATORY NOTE.—Group "A" of Section 3 includes cases of Breast, Uterus, Mouth, Lip, Tongue and Skin Cancer; Group "B" of Section 3 includes cases of Cancer of Larynx, Pharynx, Bladder, Prostate, Vulva, Penis, Ovary, Stomach, Bowel, Bone and certain other sites.

No attempt has ever been made to exploit one form of treatment, each case has been dealt with individually, and in general admirable co-operation was secured between practitioners in the various branches of medicine so as to determine the most hopeful line of treatment. This co-ordinated action was largely brought about through the agency of a voluntary committee of the medical profession set up for the purpose, and on which all forms of specialism and general practice were represented. It is difficult to assess the results of this action, and comparison is practically impossible at the present time, but such results as have been obtained indicate that cancer need not be regarded as a disease incapable of cure. What cure is in this disease is a difficult question to answer as recurrences are apt to take place and manifest themselves many years afterwards, while over a long period among the older persons treated—and these are in the great majority—intercurrent illness unconnected with cancer is apt to intervene, determining the patient's life. The cases coming under observation and treated under these arrangements were divided into three classes; first, those who when first seen gave a reasonable prospect of cure from radical treatment, either surgical or radio-therapeutics, or both; second, those who when first seen were regarded as not having so good a prospect of cure from such procedures but in whose case such treatment should in all the circumstances be attempted as affording the

only hope of recovery; and third, those who when first seen were so far advanced in the disease that only palliative measures were possible. The following table shows the survival rate in each class after one to seven years respectively.

CANCER—SURVIVAL RATE PER CENT. ACCORDING TO THE CLASSIFICATION WHEN FIRST SEEN.

Class of Case	Survival Rate per cent at the end of each year after first treatment						
	First Year	Second	Third	Fourth	Fifth	Sixth	Seventh
Curative—							
More favourable ..	82·3	66·0	60·0	53·3	46·0	41·4	32·5
Less favourable ..	60·0	44·2	35·4	33·6	28·5	25·4	25·0
Palliative	24·0	10·8	5·3	2·1	2·1	2·1	1·4

Many medical questions arise in determining what is to be regarded as a favourable case for radical treatment, but from the point of view of the public generally it should be stated with emphasis that few cases can be regarded as favourable if the disease is not brought under medical notice in a moderately early stage, and generally the earlier treatment is begun the more hopeful one can be of a good result. With the co-operation of the public and with the increasing knowledge and improved practice which medical science is giving us, better results in treatment will undoubtedly be obtained, but the table just given shows a fair picture of the possibilities of treatment at the present time and encourages a belief in the measures so far taken in the City. The steps which might be taken in the prevention of cancer are generally still wrapt in doubt. There is considerable knowledge as to an apparent relationship between the development of cancer and physical and chemical causes, but such circumstances do not appear to exist locally to any extent and the scope of pure preventive action both locally and generally is very limited indeed.

Respiratory Disease. During the past six years the deaths from pneumonia have shown a distinct tendency to decrease in number, possibly associated with improved methods of treatment, but on the other hand the deaths from bronchitis have been considerably above the average, the figure for 1940 being only exceeded in recent years in 1929 when 529 deaths were recorded.

DEATHS FROM BRONCHITIS AND PNEUMONIA, 1935-44.

	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Bronchitis	135	171	160	100	139	474	323	264	298	232
Pneumonia	241	291	240	167	186	213	152	175	205	181

Deaths from violence have kept at a satisfactory low figure as seen in the following table :—

	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Deaths	198	186	173	194	229	204	194	158	161	146
Mortality rate per 1,000	0·68	0·64	0·60	0·67	0·81	0·75	0·72	0·60	0·62	0·56

IV.—MATERNITY AND CHILD WELFARE.

INFANT MORTALITY.

The infantile mortality for three years in succession has been under 55 per 1,000 births, less one-third of what it was at the beginning of the century, and only 40 per cent. of what it was thirty years ago. The following table gives the rates in Bradford from 1917 according to the age of the infant at death.

INFANTILE MORTALITY RATE PER 1,000 BIRTHS SINCE 1917 WITH THE RATES IN THE FIRST FOUR WEEKS OF LIFE.

Year	Weeks				Total for four Weeks	Total First Year
	First	Second	Third	Fourth		
1917	31.2	7.4	2.6	3.0	44	132
1918	28.1	6.2	3.6	3.6	42	125
1919	34.0	5.9	4.2	2.7	47	114
1920	27.8	8.9	5.8	3.6	46	93
1921	29.9	6.8	4.9	2.8	45	100
1922	22.2	6.5	5.0	3.8	37	87
1923	22.9	5.3	4.0	4.2	36	78
1924	27.3	4.8	5.0	2.4	40	92
1925	23.8	4.1	4.8	3.1	36	95
1926	24.0	6.2	5.5	3.2	39	92
1927	25.0	5.8	3.0	2.5	36	92
1928	26.2	4.3	2.5	0.9	34	69
1929	24.4	3.7	3.9	3.2	35	80
1930	26.7	5.3	3.9	1.6	37	75
1931	26.5	5.6	2.9	2.2	37	71
1932	31.6	5.2	2.0	2.2	41	75
1933	21.3	3.8	4.9	2.1	32	79
1934	31.4	2.2	1.2	1.7	36	62
1935	28.8	3.3	0.8	2.5	35	64
1936	29.7	5.4	4.1	2.3	41	82
1937	25.7	3.5	3.5	2.0	35	69
1938	26.4	2.8	3.1	2.1	34	58
1939	26.3	2.1	2.5	1.9	33	61
1940	23.2	3.6	3.3	3.6	34	68
1941	23.7	3.4	2.8	2.3	32	68
1942	20.1	3.0	1.8	2.3	27	50
1943	20.0	2.4	1.9	1.4	26	51
1944	22.0	3.9	1.9	0.9	29	53

While the infantile mortality has shown as a whole a very great decline, the fall has been much more marked after the first month of life. Only in the last five years has there been an appreciable fall in the rates for the first four weeks of life. It is, however, now quite marked, and

it would seem that the increased ante-natal supervision now being undertaken as well as the increased admission of maternity cases to hospital is now having a good effect in saving life during these early weeks.

Illegitimacy and Infantile Mortality. There has been an increase in the proportion of illegitimate births, but the death-rates among these children has also been falling, the enormous difference in the chances of living one year between illegitimate and legitimate children noted thirty years ago being now very much less marked.

ILLEGITIMACY IN BRADFORD FROM 1935.

Year			1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Number	..	..	219	220	214	220	214	234	201	244	327	391
Percentage	of	total										
births	..	..	5.2	5.3	5.1	5.3	5.9	6.3	5.7	6.0	7.9	8.4

INFANTILE MORTALITY RATES AMONG ILLEGITIMATE AND LEGITIMATE INFANTS.

Year			1935	1936	1937	1938	1939	1940	1941	1942	1943	1944
Illegitimate	..	..	64	118	107	64	104	56	84	69	76	67
Legitimate	..	..	64	80	67	58	59	69	67	50	47	52

Causes of Death in Infantile Mortality. The table on page 30 shows the deaths from stated causes under one year for the past ten years. It will be seen that the cause which contributed to the largest number of deaths was prematurity, from which about one-third of the deaths occurred, pneumonia and bronchitis were the next largest cause, while diarrhoea and enteritis follow a considerable way behind.

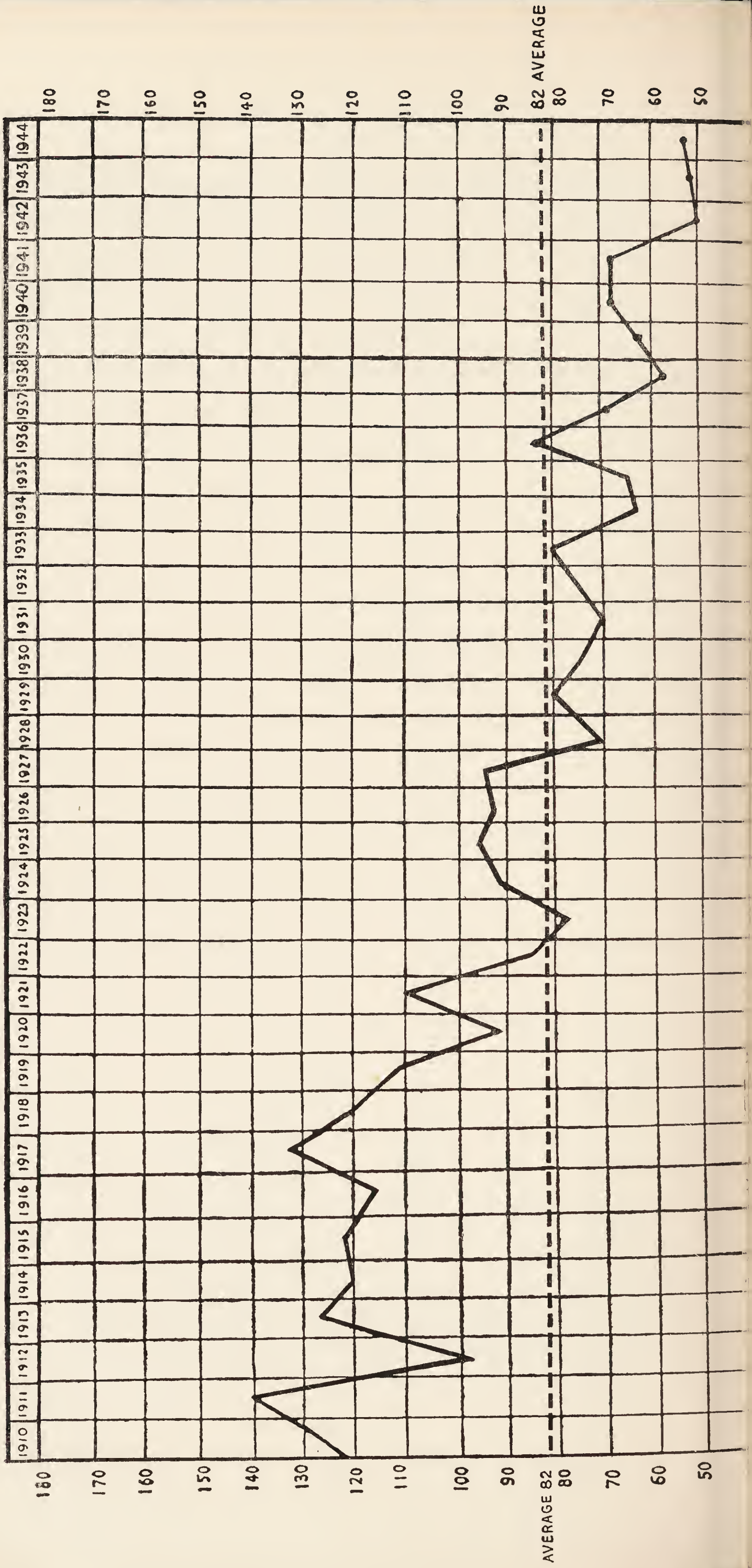
INFANT MORTALITY: NET DEATHS FROM STATED CAUSES UNDER 1 YEAR OF AGE FROM 1935.

Causes of Death	1935	1936	1937	1938	1939	1940	1942	1942	1943	1944
Chicken-pox	—	3	—	—	—	—	—	1	—	—
Measles	3	3	1	5	—	—	3	—	2	1
Scarlet Fever	—	—	—	—	—	—	—	—	—	—
Whooping Cough	6	7	8	8	6	1	8	4	5	5
Diphtheria and Croup	4	1	1	1	—	—	—	—	1	—
Erysipelas	1	1	1	—	1	—	—	—	—	—
Tuberculous Meningitis	—	3	1	—	—	1	1	2	—	1
Abdominal Tuberculosis	—	—	—	—	—	—	—	—	1	—
Other Tuberculous Diseases	1	—	—	—	—	—	1	—	—	—
Meningitis (not tuberculous)	2	5	3	4	1	1	2	2	3	1
Convulsions	13	17	17	14	7	19	10	8	7	9
Laryngitis	—	—	—	—	—	1	—	—	—	—
Bronchitis	5	8	6	3	6	15	9	14	6	7
Pneumonia (all forms)	39	53	45	35	23	46	27	32	46	45
Diarrhoea and Enteritis	19	36	30	21	26	17	17	21	14	17
Gastritis	1	—	1	—	—	—	1	—	—	—
Syphilis	2	1	4	—	1	—	—	1	—	—
Rickets	—	—	—	—	1	—	—	—	—	—
Suffocation (overlying)	1	—	1	—	1	4	—	2	—	1
Injury at Birth	5	8	5	18	13	8	9	4	4	4
Atelectasis	14	8	14	2	5	1	8	6	11	6
Congenital Malformations	27	41	28	17	35	29	19	31	17	19
Premature Birth	83	77	71	80	70	61	57	82	58	88
Atrophy, Debility and Marasmus	11	13	13	2	4	13	11	5	11	14
Other Causes	16	39	28	18	18	34	23	27	27	31
Total	253	321	278	228	218	251	242	242	213	249

INFANT MORTALITY IN BRADFORD AND ENGLAND AND WALES
FOR EACH YEAR, AND IN GROUPS OF FIVE YEARS SINCE 1896.

BRADFORD			ENGLAND AND WALES		BRADFORD			ENGLAND AND WALES	
		Average		Average			Average		Average
1896	143	165	148	156	1921	109	92	83	76
1897	179		156		1922	87		77	
1898	184		160		1923	78		69	
1899	181		163		1924	92		75	
1900	140		154		1925	95		75	
1901	168	153	151	138	1926	92	82	70	68
1902	139		133		1927	92		69	
1903	148		132		1928	69		65	
1904	167		145		1929	80		74	
1905	144		128		1930	75		60	
1906	152	132	132	117	1931	71	70	66	62
1907	124		118		1932	75		65	
1908	143		120		1933	79		64	
1909	116		109		1934	62		59	
1910	127		106		1935	64		57	
1911	139	122	130	110	1936	82	68	59	55
1912	99		95		1937	69		58	
1913	128		109		1938	58		53	
1914	122		105		1939	61		50	
1915	123		110		1940	68		56	
1916	119	117	91	91	1941	68		59	
1917	132		97		1942	50		49	
1918	125		97		1943	51		49	
1919	114		89		1944	53		46	
1920	93		80						

INFANT MORTALITY, 1910-1944.
Average for 35 years ... 82.



MATERNITY.

The deaths of women in child-birth shows a most satisfactory fall during the past six years, and it is now less than 40 per cent. of what it was twenty years ago.

The causes of death of women in child-birth may conveniently be divided into two groups, those due to septic infection and those due to toxæmias and other causes. The record of the mortality rate per 1,000 births from each of these groups in previous years in Bradford and England and Wales is shown below.

MATERNAL MORTALITY RATES IN PREVIOUS YEARS.

Year	Puerperal Sepsis	Other Puerperal Causes	Total Puerperal Mortality
1926	2.62	4.04	6.66
1927	2.88	3.09	5.97
1928	2.91	2.91	5.82
1929	2.42	2.64	5.06
1930	3.27	1.74	5.01
1931	1.64	3.04	4.68
1932	2.61	3.08	5.69
1933	1.96	2.69	4.65
1934	1.89	3.54	5.43
1935	1.69	0.97	2.66
1936	1.47	3.17	4.64
1937	0.95	1.67	2.62
1938	0.49	3.66	4.15
1939	1.32	1.85	3.17
1940	1.05	1.83	2.85
1941	1.63	1.36	2.99
1942	1.20	1.20	2.40
1943	0.70	2.08	2.78
1944	0.83	1.67	2.50

The fall is seen to affect both the chief causes of death and is in the main due to the increased ante-natal care and the higher standard of midwifery practice among midwives as well as to medical advances in the treatment of sepsis. The increase in the number of confinements taking place in institutions during the past six years has been very marked, and in August 1942 it became necessary to arrange additional accommodation at Semon's Home for such cases, the number of beds thereby provided being 25, which was later increased to 32, while the maternity beds at the municipal general hospital was increased to 112. The following table

shows the numbers of women confined in institutions and at home from 1941, together with the number of ante-natal cases admitted to hospital for treatment prior to confinement.

CONFINEMENTS 1941-44.

		Total in City	Institutions	Ante-natal Cases in Hospital	Domiciliary
1941	...	3741	1295	576	2446
1942	...	4178	1526	468	2672
1943	...	4490	2150	584	2415
1944	...	4925	2906	736	1953

The totals do not correspond exactly as many cases were treated both in the district and in institutions, and the table, of course, includes still-births. It will be seen, however, that 60 per cent. of confinements now take place in hospital and it will be appreciated from the table that in a very large number of cases the closest co-ordination between domiciliary and institutional practice must in the interest of the patients be maintained.

The number of midwives in practice in Bradford is 80, 32 being domiciliary municipal midwives, 15 private midwives and 31 midwives in institutions.

Supervision of Midwives. The work is undertaken by a woman Medical Officer of the Maternity and Child Welfare Staff and a Nurse Assistant Supervisor.

The municipal midwives are seen at least once a week and the midwives in private practice are also inspected at regular intervals.